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"Supplementary Private Health Insurance: The Characteristics of Subscribers"

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Abstract

Despite the fact that public medical care has being heavily subsidized through a statutory national health system there has been a growing number of people who opt to enroll in extra private coverage. Using a two part model to infer the insurance decision and subsequent amount of insurance chosen we found out that people's decision over private health coverage is not related with their health. The pattern of consumption of medical care that is not available in the public sector and a good socio economic background were found significant modeling the demand for private health insurance.

Keywords: Supplementary Health Insurance, Voluntary Health Insurance, National Health System

1. Introduction

There has been a growing amount of Private Health Insurance (PHI) coverage in Portugal over the last decades and already by 2009 1.883.801[1] people carried some kind of private health coverage, an impressive number that is somehow paradoxical since public health care is close to free at the point of consumption. The perspectives of insurance companies and respective associations have been that the market will continue to grow in the future and the availability of private insurance is one central aspect of liberalization of the economy. However, all those predictions are tied to changes in both demand and supply side will occur but also to the presence of the national health system.

The objective of this study is to provide an overview of demand for PHI in the context of the Portuguese National Health System (NHS) by defining the profile of PHI subscribers and estimating the effects of different determinants in the decision to insure.

[1] Associação Portuguesa de Seguradores [Portuguese Insurance Association].

Important aspects make the health insurance market very peculiar: the level of uncertainty, the information asymmetries between agents and the existence of competitive frictions towards governmental presence in the market.

The NHS provides full coverage for all medical expenses independently of users´ age and health status but users can supplement it with private health insurance and thus granting both access to public and private medical care. While in the former, each person's contribution provides lifelong and full coverage through progressive taxation, in the latter each person's membership is annual and grants different levels of coverage by different contracts with a premium proportional to the health costs that each person is expected to have in the future.

However, at present, due to the actual recessive macroeconomic conditions, government is facing pressure to get control over NHS expenditure. Hence, there is an implicit pressure shifting the line between what NHS can cover, changing the framework in which insurance companies operate. To be able to understand the place of private initiative and PHI evolution is fundamental to understand how demand for PHI is characterized. In this context it becomes interesting to study what is determining people's decision to pay for extra coverage in the NHS context.

We use a two part model to derive the insurance decision and the amount at which people benefit. The results prove that the attraction of private medical care is that it allows people to overcome the specific limitations and problems with the public sector as in the private sector general and specialist medical care is faster and more comfortable. However, voluntary insurance is not an option extended to all the population. People from low socio economic backgrounds and who tend to be sicker tend to stay out of private coverage.

Our main contribution to the literature comes from our updated data base that was built for the purpose of this study, which allows us to infer a wider set of characteristics than is usually found in the current literature, since they rely on national health surveys to extract some information for the private insurance market.

This paper is divided into five sections; the second section discusses the features of the Portuguese NHS and the role of private insurance. Section three will go through some related literature on the demand for VHI. Section Four will describe the model, the data, the econometric framework, and the last section is designed for discussion of the results.

2. Portuguese NHS and the role of private health insurance

2.1- The Portuguese National Health System

The approval of article 64 of the Portuguese constitution, in 1976, consecrated the right to health protection which would be done by the creation of a universal free national health service. By 1979 the NHS was created in a model respecting the public administration model: facilities were state property and the staff was public servants.

The mission of the NHS was to create tools for the state, as financier and supplier of public medical services, to grant the supply of medical care and financial protection to all citizens in health expenses. For this purpose, policies to modernize medical services were developed while at the same time the system that would protect citizens from medical expenses was implemented.[2] From that day on, citizens were under NHS coverage which pays the costs of medical treatment.

Individuals contribute compulsorily to NHS via taxes ensuring all medical treatments that are supplied by NHS are available. In practice, no one can be excluded from the

[2] Detailed information at Barros and Almeida Simões[1].

system even if they do not pay taxes nor can they avoid tax contributions to the NHS even if they will never benefit from public medical treatment.

The state is expected to control the financial and the operational dimensions of NHS: financing this system is a state responsibility which establishes the proportion of governmental budget that is devoted to health. With this government grants the supply of medical services (paying for facilities, salaries, equipment,…) but also pays for the medical costs of each individual (exams, surgeries,…). Since the state pays for all costs and individuals are not responsible for their own health cost this drives to abusive and unnecessary use of NHS and this led to the approval in 2003[3] of the implementation of user charges, that individuals would have to make, but these were effectively not compulsory until in 2010[4] when penalties were introduced for those who did not pay their respective user charges.[5]

Provision is made on public facilities except in some cases where public facilities are not available but considered under NHS. In those situations the NHS has agreements with private providers to provide treatment and thus users can look for private care as in the case of hemodialysis, laboratory exams, image exams, physiology, endoscopies, physical medicine and rehabilitation [6].

The NHS is conceived in a way that users should look for regular medical support by their general practitioners in their respective local health care centers and then according to their needs and family doctor recommendations go to a specialist consultation, or for any other hospital treatment. Also, instances of simple condition such as flu, fever and

[3] Lei 47/90 1990 introduces users charges in the system but were only implemented in 2003 with Decree Lei 173/2003 Art. 1.
[4] Diário da República, 1.ª série — N.º 253 — 31 de Dezembro de 2010, artigo 158º.
[5] Exemptions exist for low income groups.
[6] List of services covered by NHS but that may be provided by private medical care at L 11/1993,de 15 Janeiro.

other non severe symptoms should also be treated in local health care centers and then according to users' needs, they may be referred to hospitals.

However, this system has several problems since many users do not have general practitioners and there is uncontrolled access to emergency rooms. These situations cause many users to access hospital services directly, leading to long waiting times for hospital emergency episodes. For specialist consultation users also face long waiting times. As a result, this drives specialists consultations that are provided and funded by the NHS are more and more taking place in the private sector.[7]

In spite of the improvements that have been made in the last decades the NHS fails to achieve efficiency, resulting in high costs and inequalities. However, Portugal ranks well in the international context in measuring both equity of access and quality of NHS: 12th compared to the rest of the world.[8]

2.2- Supplementary health insurance coverage

On the other hand there has been a rise in the market for private medical care where people find modern facilities and faster medical treatment. The main areas provided by private care have been general consultancy, specialist consultancy and selected surgeries.

Since out-of the-pocket payments are extremely high, when users benefit from extra insurance coverage this lowers the costs of using private medical care. Thus, the privately insured population obtains coverage in the case of both unexpected hospitalization and access to specialist medical care for which consumption is more predictable.

[7] According to Associação Portuguesa de Hospitalização Privada in 2005 already 67,6% of gynecology, 66,4% of ophthalmology, 54,2% of cardiology, 45,5% of orthopedics and 31,1% of pediatrics consultancies did take place on the private sector.
[8] Find detailed information about equity and efficiency measures by World Health Organization at [21].

Individuals cannot stop their state contributions nor opt out the NHS but they can pay a premium to benefit from extra coverage in the private sector which has different characteristics: 1. For the period of the contract, while NHS grants lifelong coverage, private insurance offers contracts of the nature "year and subsequent". 2. For the scope of the contract, the NHS funds all the medical care available in the public sector while private contracts have different levels of coverage depending on the premium paid, but it does not cover situations of pré-existing diseases (cancer, HIV,…) or cases where the user is considered responsible for the illness (for example due to drug or alcohol abuse)[9].

Since individuals are already covered by the NHS which is much more comprehensive than private contracts, it is important to understand the nature of PHI in this context. The relationship of PHI to state provision is different either they operate in France, Germany or Portugal. In these three examples private insurance market faces different relationships with NHS.

Table 1. Summary of relations with NHS

Relationship with NHS	**Example**	**NHS**	**PHI**
Substitutive	Germany	Income < X	Income > X NHS or PHI. Never both at the same time
Complementary	France	Medical care costs X+ K. NHS pay X and user pays K.	Medical care costs X+ K. NHS pay X and PHI pays K
Supplementary	UK, Portugal	NHS coverage is compulsory and universal. Private coverage is optional and user may accumulate the two coverages.	

In the substitutive model, if the annual gross income exceeds a certain threshold[10], then individuals are allowed to leave the public system and opt for exclusive private coverage. The complementary system covers medical care that is not included in the NHS but also grants co-payments. For the Supplementary case, coverage allows for

[9] Associação Portuguesa de Seguradores [Portuguese Insurance Association].
[10] For Germany this threshold was 49,950 euros in 2010.

users to choose if they want only NHS coverage or to get private and public medical care simultaneously covered so they can opt for which provider best fulfills their needs.

2.3- The concept of Voluntary Health Insurance

There are several drivers that determine the actual extent of PHI coverage, however it is first important to note that not all contracts are voluntary. This means we find many people covered by PHI even though they have not made any direct decision about private coverage, so we find in the market people that are not even aware they are covered by PHI. This was shown by the results of the Portuguese national survey on health conducted in 2005, when close to 20%[11] of population was covered by PHI but only close to 10,5%[12] of the population had reported to having PHI while the remainder were not aware of their coverage. The results show that enrolment is driven not only by consumption of private care but also by other mechanisms:

1- On credit cards where insurance companies induce micro health insurance for their members. Usually this is a very basic coverage but represented close to 26% of the coverage contracts in 2005. 2- On mortgages where enrolment in some source of health insurance would lower the spread paid.[13]

Hence, the concept of voluntary health insurance (VHI) is a more restrictive measure than the number of contracts covering people. VHI is therefore used to refer to individual or group policies for which people decided to pay to supplement the NHS for current or expected consumption of private medical care.

[11] Data from Associação Portuguesa de Seguradores (2.111.802 contracts); Data from INE (population 10.549.424)
[12] Data collected from INE[23].
[13] For example with a 3% spread they would get 0, 5% discount on the spread if they enroll in a PHI that costs X. At the end, individual will pay 2, 5%+ X.

Thus, at the empirical level what is relevant is to define the profile of those who enroll in voluntary insurance and thus to understand the impacts of the variables that define the demand in the respective decision to insure.

3. Related literature on VHI

The most common misconception about the reason for individuals wanting voluntary insurance is that it is related to health status. An individual's current health status allows to forecast future medical consumption since the current situation is the most reliable proxy for future health care needs and respective costs of medical care. Hence, it would be expected that people who are actually sicker, with chronic diseases or older would be more likely to enroll in a VHI in an effect that is referred in the literature as Adverse Selection[16]: sicker people, with information on their health status, are expected to demand more future health care and thus generate larger medical expenses. Given there is interdependence between medical care and a scheme to grant costs coverage, individuals expecting future medical care will in fact have a higher tendency to be enrolled in VHI, while healthier people who do not expect to have large medical expenses would not find it a good deal since they already have the NHS coverage for free.

Despite health status being correlated with medical care demand, there is limited evidence of adverse selection for the decision of purchasing voluntary insurance[19], and we can in fact find the opposite: more healthy people are more likely to insure[4]. Risk selection on the private insurance markets is verified when the ones that insure more are not the sicker people but the healthier ones.

When trying to attract good risks to their portfolio private insurance companies induce high risk people with a tendency to generate more expenses to not look for voluntary

insurance by imposing high premiums or ultimately refusing to insure certain health situations[15].

Sicker people may find more benefits from membership but they face a higher probability of being refused higher amounts of coverage or paying higher premiums and they find economically more beneficial to use only the NHS. On the other hand healthier people will be able to get more complete coverage and get lower premiums, they will be more likely to insure once they are faced with more economic appealing contracts.

It is also expected that healthier people are more determined to take precautionary behaviour, and one way to behave more actively towards health is having access to faster and better medical care[14].

But if adverse selection gives only a very limited explanation of the household's decision for health insurance or it is more than offset by risk selection, what other factors can be found determining those decisions?

The level of satisfaction with the NHS will generate the first incentive to look to alternatives for NHS, and so VHI is the choice to overcome NHS restrictions. Thus, the lower the quality of NHS relative to private care, the higher the incentives for people to insure [8, 18]. For example, long waiting lists on the NHS can be perceived as reducing the quality of the NHS, imposing costs of time or comfort, augmenting dissatisfaction in using the public service and thus leading to some individuals finding it worthwhile paying for supplementary coverage to find faster and more comfortable medical care[2].

Quality of both services is important and the lower is the quality gap between public and private care, the less likely it is that people will opt-out of NHS and ultimately, if no differences exist between both services there is no benefit from opting for private care.

The perception of NHS quality may change according to age and education, with older and more educated people being more sensitive to quality gaps. This is because they are able to collect more medical information[8].

Also the characteristics of the contract plan itself are determinant. The premium paid is evidently important. The lower the premium, the more it will determine how many people will be able to decide on insure or not. However, it has been found that premium elasticities are low, because those who purchase VHI are a high income population who are not very discouraged by premium changes[9].

The lower the premiums the larger population that will be able to have VHI as an option. However, low income groups were found to never be able to participate even if premiums are very low since the co-payments are not affordable while on NHS they find little or no co-payments[6][14].

Also, if the user was voluntarily insured in the previous year, this will influence his propensity to insure in the current year[10]. When satisfaction with private care is guaranteed and users have found a contract that fulfills their demands, with everything remaining constant (same wage, same level of satisfaction with NHS, etc...) there is no incentive to return to NHS nor face search costs in finding another alternative.

However, most of the literature shows insuring decisions are more determined by socio-economic variables. In many studies these variables are not only related to the propensity to insure but also are more significant in explaining that propensity than other variables. Cameron et. all confirmed this hypothesis for Australia[5], Vera-Hernandez for Catalonia[22], Sanhueza and Ruiz-Tagle for Chile[20], Liu and Chen for

[14] This study was made in the US were no NHS is implemented. If low income workers in US will not join VHI in the absence of NHS, then by analogy may find no reason for low income workers in Portugal would get VHI having NHS coverage.

Tawain[13], Propper for the UK[17] , Bolhar et. all for Ireland[3], Holly et. all for Switzerland[11].

Income is the most relevant variable in insuring decision, reflected in all the studies we have studied for two reasons: the first is that for the wealthier people, the relative value in monetary terms of the premium is smaller and second also because illness reduces healthy time available imposing an opportunity cost that only high incomes are more willing to pay. Income was found to have a positive effect on UK, Ireland, Italy, and Portugal[12], where supplementary health insurance exists.

Income is not only important for the membership of VHI but also for the level of coverage enrolled. High income groups are expected to choose a more complete coverage while lower income groups are expected to opt by basic coverage. For statistical proposes we must be careful since it might be that groups of very high earners reduce the propensity to insure, making statistics confusing, but one reason that may arise is that very high earners may be willing to pay for out-of-pocket costs and assume risks and so not be very interested in private insurance contracts[10].

Age is expected to increase propensity to insure but only up to a certain point and then declines[11]. The reason why it declines is because from a certain age on, health tends to deteriorate quicker and with a higher magnitude. Insurance companies realize this and will charge higher premiums for older people, reducing their propensity once they reach a certain age.

Education is also reported as positively correlated with the propensity to insure. Although education brings a lower use of health care in general, the people found to be more minded to choose VHI are the more educated ones. Educated people tend to gather

more information about the options available and to understand also the limits and inefficiencies of the NHS[3].

Beside socioeconomic variables, the literature finds that the type of medical care consumed is also very important when studying the demand for VHI. Previous studies have found that the propensity to get VHI is more significant in the case of users of specialist consultancy than users of general practice (GP) or even in the case of hospitalization[5,8]. Hence, what is shown in the literature is that users will tend to enroll in voluntary insurance if the type of medical care they expect to consume is regular and thus more predictable.

The great bulk of PHI in Portugal is obtained in employment-based groups and the same is true in most countries where the majority of the existent private health coverage is provided through the workplace[7].

Group coverage currently accounts for the majority of VHI and is basically dependent on firm's policies. It is a good instrument to give other incentives to employees than rising wages. Also, offering PHI to all their employees gives companies access to fiscal benefits and thus there are high incentives to promote the offering of health insurance.

In addition group policies allow for premiums paid per person to be in general lower than in individual policies. Companies are more powerful agents than individuals in negotiating coverage premiums and also group coverage premiums are based on the risk of the group instead of being calculated on the risk individually for each person. Once contracts are homogeneous among the group the risk premiums are underestimated[15]. On the other hand, group policy contracts are more lucrative than individual policies since they enroll higher numbers of people at once, allowing for monitoring homogeneous contracts which reduces costs.

The results found in the literature suggest that the determinants of demand for the voluntary insurance are not a function of an individual's health but are more likely to be a function of the limitations of the NHS and individual's socio economic characteristics.

Hence, this study tests the hypothesis found in the literature for individuals' characteristics and public service limitation, but as described in the next section we will use a different approach that will categorize a wider set of variables and discuss their respective relevance.

4. Model, Econometric Framework and Results

The theoretical model is analogous with Propper [16][17] where the decisions around voluntary insurance are based on the expected utility for each user of having private coverage relative to their NHS coverage. With this approach we can infer that individuals will increase their propensity to enroll in voluntary insurance when the benefits of having supplementary coverage are higher relative to relying only on the NHS. According to this approach, when the benefits and costs of both situations are equal, individuals will have the same expected utility and thus they will be indifferent to supplementary coverage or not. When costs offset the benefits the propensity to insure is assumed to be zero or very close to zero and people are not expected to insure in these cases.

The literature has studied the determinants that influence the VHI decisions through an econometric model that gives the propensity to insure of each individual in the sample. The model infers the propensity of dichotomous variable outcomes, depending on a set of variables that we want to study.

Let $Y_i *$ be the propensity choice of insuring of individual i, depending on the sum of the X_i variables related to health, socio-economic conditions, health status, preferences, and the other variables described in table I.

Equation I: Probit model

Let the latent variable Y_i^* follow $Y_i * = \beta_0 + \sum_i^n \beta_1 X_i + \varepsilon$[15] with the observed variable, Y_i being defined as $Y = \begin{cases} Y_i = 1, & \text{Individual i has supplementary coverage} \\ Y_i = 0, & \text{Individual i has not supplementary coverage} \end{cases}$

This model allows to isolate the impact of each variable X_i on the propensity fixing the other variables. Our dependent variable,$Y_i *$, takes only the values 1 and 0. Therefore maximum likelihood estimation is usually applied in the research. This estimation is known has Logit or Probit and we can find studies that opted to use the first model while others use the second model.[16] We will use the Probit in our case.

To order the interest in private coverage we will model, from those who have voluntary insurance, which level of coverage they have. For this, we will use the ordered probit. This will allow us to infer if the drivers that set insurance decision are equally setting the amount of coverage enrolled in.

Based on the questionnaire results we can infer which amount of insurance people benefit from in the following groups: -Doctor's appointments, ambulatory and hospitalization; -Normal childbirth, C-section and abortion; - Stomatology; -Prosthetics and Orthotics; -Abroad extension.

Now the dependent variable will represent an ordinal format as follow:

[15] $\varepsilon \sim N(0,1)$.

[16] In the Logit estimation the logistic distribution is used while in the Probit estimation the standard normal distribution is used. These estimations are equivalent when we have large sample and do not have a fat tail problem in the distribution. In the event that we want to give more weight to the tails of the sample, the Logit should be used.

1 group of coverage	2 groups of coverage	3 groups of coverage	4 groups of coverage	5 groups of coverage
1	2	3	4	5

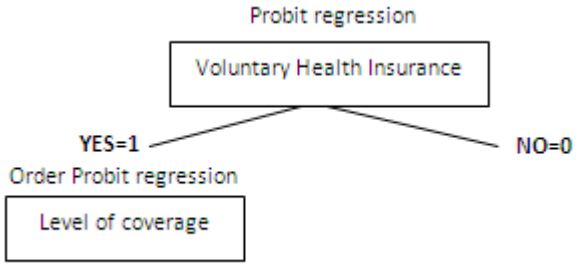
Equation II: Ordered Probit

Now, let the latent variable Y_i^* follow $Y_i * = \beta_0 + \sum_i^n \beta_1 X_i + \varepsilon$ with the observed variable,

Y_i being defined as $Yi = \begin{cases} 1\ if\ 0 < Yi \leq 1 \\ 2\ if\ 1 < Yi \leq 2 \\ 3\ if\ 2 < Yi \leq 3 \\ 4\ if\ 3 < Yi \leq 4 \\ 5\ if\ 4 < Yi \leq 5 \end{cases}$

Hence, our two part model will find the following structure:

Figure I: the two part model.



Most of the studies rely on the National Surveys on Health to gather some information about insurance purchase. This approach provides a good sample of the population because these surveys are completed at a national scale but they lack much information about private insurance decisions since the purpose of these surveys is not in fact to gather information about the insurance market.

Our study was made using a survey applied to the population of the region of Lisbon. By opting to study the population of Lisbon we can conveniently control for some problems that may arise in the sample while we expand the set of questions that we want to infer. The data was collected through an on- line questionnaire and personal interviews. 287 respondents between the age of 18 and 69 have been asked questions about different aspects that we found necessary to produce information for our analysis.

80% of the sample answered online. The first observation answered our questionnaire on 26-10-2011 and the last one on 30-11-2011.[17]

Although the data collected is not very large, which reduces the representativeness of the sample, we do have an advantage in the questions because they were made exclusively to infer the characteristics of the demand and thus allow a more detailed analysis. The questions cover six groups of relevant information:

1. Socioeconomic background (age, education, income, sex, household composition, unemployment status[18]);
2. Self assessed health (we asked people to assess their own health[19])
3. Personal history: (smoking habits, height, weight, physical limitations, close relative illness like cancer, chronic diseases[20]);
4. Pattern of consumption of medical care (urgencies use preference, number of general consultancies, number of consultancies related to chronic diseases, with or without GP, subsystem coverage, comparative quality perception between private and public medical care, private consultancy in the previous year, type of last consultancy[21], children under six years old);
5. Preventive behaviour (we asked whether people were passive towards their health or not)
6. People's relation to health insurance (knowledge about the products available in the market, maximum willingness to pay)

[17] Please see the full version of the questionnaire in Annex I.

[18] The variable unemployment is a dummy variable that will be regressed against not being unemployed, this meaning it can be employed, self-employed, student or not being looking for a job.

[19] This variable is divided in 3 dummies groups: good, reasonable and bad self assessed status. The god and bad self assessed groups will be regressed against the reasonable group.

[20] We asked from a list over the following chronic conditions: Respiratory tract, Digestive apparatus, Urinary apparatus, Genital apparatus, Bones and Articulations, Metabolic diseases, Neurological diseases, Skin Diseases, Veins, Eyes, Ears, Nose and Throat, Cancer Diseases. See questionnaire in Annex I.

[21] We ask only about the last medical consumption, because it is not expected that people would answer accurately about other previous consumption. This approached is aligned with the methodology followed in the National Health Survey 2004/2005.

It is relevant to remark the difference between the variables in groups 3 and 4: The personal history is not mandatorily causal of pattern of consumption of medical care. It is important to distinguish between what is the health problem and what is the consumption of medical care. We may find healthier people visiting doctors more often just for precaution.

Some of the results were directly plotted into the database (age, sex, ...) while others were transformed following previous academic studies (household income,…)[22]. The data must be stratified by sex, age, education and income such that it is representative as possible of the population. Still, there remains an overweight of high income and education respondents[23].Hence, we reduce the scope of our analysis to our sample instead controlling for the bias in income and education. Although our sample is not representative of the population of Lisbon, it is still very relevant because we can infer the relevant characteristics of insured people.

Table II shows the estimated effects of characteristics on the propensity of having VHI (first two columns) and for the amount of insurance chosen (last two columns). Complementing the estimated parameter there are the respective p-values for each variable.

Among the independent variables in our estimate, four variables from the socioeconomic group (age, household income and unemployment status), the self health status group (the good self assessed status), two variables from personal history group (body mass index, existence of chronic diseases), seven variables of pattern of consumption of medical care group (enrolled in a health subsystem, preference for urgencies than health center, number of visit to doctors, number of visit to doctors due

[22] See Table I.
[23] See Table II.

to chronic conditions, having kids until 6, and the last consultancy to be a specialist consultancy) and the group over preventive behaviour, do have a lower p-value and therefore are significantly more important variables.

Socio economic group follows the results from literature, with income and employment status having strong impacts on the propensity to insure. The results support the hypothesis described in the literature except the coefficients for education that is insignificant and therefore inconclusive.

There is limited evidence on personal history group of variables: either they have negative impacts or low significances. This goes in accordance to what literature has shown about the inconclusive problem that the sicker population will not enroll in PHI. In fact, a good self assessed health status was found relevant and significant for the propensity to insure.

The group of pattern of medical consumption variables shows that the type of expected medical care highly influences the purchasing decision. Who visit doctors for chronic conditions and that went to specialist consultancy lately, are more likely to insure. This behavioral identity shows that a moderated and more predictable use of medical care is an identifiable factor leading to the need for private coverage. Having children is definitely a motive to have private health insurance.

Preventive behavior is associated with propensity to insure indicating those who are not passive towards health do enroll in supplementary coverage. Those who act more actively may be suggested to not be willing to have risk attitudes towards their health and finding useful to have a supplementary option.

More surprisingly, most of the coefficients are not significant in the second part of the model. Income, good self assessed status and children until six are significant in both

parts of the model. This finding support the hypothesis that a good socio economic condition, good self assessed health and the demand for fast access to services are important drivers, showing that people decide to insure to overcome NHS problems but they must be able to afford that decision.

5. Conclusions

People that enroll in the voluntary insurance are characterized for being not unemployed and having good economic conditions, meaning they must have the capacity of paying for the voluntary insurance. The type of consumption of medical care that they expect to have is moderate and having kids is a determinant for coverage the level of coverage chosen once they predict a regular consumption of children medical care. Also, people enrolled tend to have a better health and to have more precautionary behavior.

The results show that the impact on socio-economic variables as well and how people asses their own health status are important dimensions that drive the insuring decisions. The results are consistent with those the literature has been showing.

Our study finds also that impacts on the pattern of medical care consumption and attitude towards health are also important the purchasing decisions. In the group of pattern of consumption we find that the performance of private medical care versus the public medical care has a high impact on the purchasing decisions. The hypothesis that people enroll in PHI to overcome the NHS limitations is correct.

The general results do show that the variables that influence insuring decisions are not representative of the decisions about the amount of insurance chosen. The amount of coverage chosen increases highly with income and existence of children.

Projecting the trajectory of the market is today much more complex. On one hand the contracts via credit cards and bank mortgages are likely to suffer from the reduction on these markets. On the other hand VHI function will suffer a series of shocks that have contradictory effects. The reduction of income and employment will have a negative influence on demand for private insurance. The pressure to control the expenses of NHS will reduce the scope of what NHS can cover, thus will have special impact on the variables on the group of consumption and thus affecting the likelihood of insuring.

Private medical care seems to be more attractive but less affordable and filling the market with high uncertainty for what demand will be in the future.

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Table I: Definition of variables, full sample

Variables	*Mean/ Std Dev*	*Definition*
phi	.48/ .50	1 if respondent has supplementary coverage, 0 if no
coveragelevel		coverage level of respondents that reported phi. Scale 1-5
age	39/ 11. 2	number of years
badselfassed	.007/ .085	1 if respondent reported bad self assessed health, 0 in other case
reasonableselfasses	.188/ .392	1 if respondent reported reasonable self assessed health, 0 in other case
goodselfasses	.804/ .398	1 if respondent reported good self assessed health, 0 in other case
masculin	.48 /.50	1 if respondent is male, 0 if no
education	14./ 3.7	number of years studied
wagehousehold		1 if <600; 2 if 601<x<900; 3 if 901<x<1200; 4 if 1201<x<2000; 5 if 2001<x<3000; 6 if 3001<x<4000; 7 if 4001<x<5000; 8 if x>5001
householdincome	2.73/ 1.51	$\frac{\text{Wagehousehold}}{(1\text{adult} + 0{,}5\text{adults} + 0{,}5\text{young} + 0{,}3\text{kids})}$
unemployer	.035/ .18	1 if respondent is unemployment, 0 if no
selfassessedhealthstatues	3.8 / .62	1 if very bad; 2 if bad; 3 if reasonable; 4 if good; 5 if very good.
smoke	.37/ .48	1 if respondent smokes regularly, 0 if no
bmi	82.3/ 367.3	$\frac{\text{Weight}}{\text{Height}^2} * 1000$
chornicdiseases	.59/ .49	1 if respondent smokes reports any chronic disease, 0 if no
severeillnesrelative	.44/ .49	1 if respondent´s close relative had severe illness, 0 if no
injury	.13/ .33	1 if respondent was injured requiring treatment, 0 if no
subsystem	.34/ .47	1 if respondent is covered by subsystem, 0 if no
Gp	.75/ .43	1 if respondent has general practitioner, 0 if no
hospitalurgency	.31/ .47	1 if respondent prefers going to hospital urgencies for basic treatment, 0 if prefers going to the local health center
preferenceprivate	.66/ .48	1 if respondent asses private medical care better than public medical care, 0 if no
privateconsultancyt-1	.48/ .5	1 if respondent went to a private doctor last year, 0 if no
doctorvisits	2.9/ 2.72	number of doctor visits during this year t.
doctorvisitschronic	1.2/ 1.7	number of doctor visits during current year related to chronic diseases
kidstil6	.19/ .39	1 if respondent has children until age of 6, 0 if no
speciality	.39/ .49	1 if last medical care was specialist consultancy, 0 if urgency or general
preventive	.86/ .35	1 if this year had take preventive behavior on flu, hta, cholesterol raio- x 0 if no
riskaversion		Measure of risk aversion, using simulated die game

Table II: Model of insurance decision and Coverage Level

	Probit Regression (287 observ)		Ordered Probit (138 observ)	
	Coefficient	p-value	Coefficient	p-value
	Dependent – Insurance Choice		Dependent- Coverage Level	
age	.0175109	0.043	.0113467	0.271
masculine	.1550866	0.429	-.2866083	0.206
education	.0345395	0.195	.0089991	0.764
householdincome	.1749037	0.023	.1254744	0.044
unemployer	-1.091505	0.064	.3198288	0.699
badselfassed	-.0923808	0.900	.5565037	0.629
goodselfasses	.463988	0.040	.8971261	0.001
smoke	.2411683	0.207	-.0131787	0.948
bmi	.0006025	0.026	-.0002444	0.272
chornicdiseases	-.4423426	0.032	.0539444	0.809
severeillnesrelativ	.2125076	0.246	.2747923	0.171
injury	-.3224094	0.260	-.0659527	0.835
subsystem	-1.031148	0.000	.0152004	0.953
gp	.1710422	0.424	-.2554059	0.305
hospitalurgency	.4801577	0.018	.350572	0.106
preferenceprivate	.5337392	0.014	-.148065	0.605
privateconsultancyt-1	.3670165	0.100	-.0676562	0.798
doctorvisits	-.099057	0.041	.0827596	0.110
doctorvisitschronic	.1683213	0.036	-.0087574	0.921
kidstil6	.8157608	0.001	.8272917	0.000
speciality	.5807122	0.004	.2635123	0.219
preventive	.9070521	0.002	-.5384432	0.174
riskaversion	.0063166	0.133	.0120754	0.006
_cons	-3.678408	0.000		

Anex I: Questionário à Saúde (original version)

1- CARACTERIZAÇÃO SOCIODEMOGRÁFICA
1.1-SEXO *
Masculino/ Feminino
1.2- IDADE *
1.3- QUANTAS PESSOAS CONSTITUEM O SEU AGREGADO FAMILIAR? *
Adultos/ Jovens (18-24) /Crianças(0-18)
1.4- EM QUE CONCELHO RESIDE? *
1.5- QUANTOS ANOS DE ESCOLARIDADE COMPLETOU, COM APROVEITAMENTO? *
1.6- QUAL É A SUA SITUAÇÃO LABORAL? *
Trabalha por conta de outrem/Trabalha por conta própria Estudante/ Reformado(a) ou Aposentado(a)/ Desempregado(a)/ Outro

2- INFORMAÇÕES GERAIS DE SAÚDE
2.1- QUAL É O SEU PESO? *
2.2- QUAL É A SUA ALTURA? *
2.3- DE UMA MANEIRA GERAL, COMO AVALIA O SEU ESTADO DE SAÚDE? *
Muito bom/ Bom /Razoável/ Mau/ Muito Mau
2.4- É BENEFICIÁRIO DE ALGUM SUBSISTEMA DE SAÚDE?
ADSE (ASSIST. DOENÇA SERV. ESTADO)
SSMJ (SERV. MINIST. JUSTIÇA)
ADM (ASSIST. DOENÇA AOS MILITARES),
SAMS (SERV. ACÇÃO MÉD. SOC. BANCÁRIOS)
SAD/PSP OU SAD/GNR
Outro
2.5- TEM ALGUM SEGURO PRIVADO DE SAÚDE?
Sim/ Não
2.6- SE TEM SEGURO PRIVADO, INDIQUE A RAZÃO:
Resulta de uma decisão individual sua
Está associado a um empréstimo bancário ou cartão de crédito
Está associado a uma apólice de grupo de trabalho
Está associado a uma apólice de grupo de família
2.7- SE TEM SEGURO PRIVADO, INDIQUE OS RISCOS COBERTOS:
Consultas, ambulatório e internamento hospitalar
Parto Normal, Cesariana e interrupção voluntária de gravidez
Estomatologia
Próteses e Ortóteses
Extensão ao estrangeiro
2.8- CONSIDERA-SE BEM INFORMADO(A) SOBRE OS SEGUROS PRIVADOS DE SAÚDE (PREÇOS, COBERTURAS, REDE MÉDICOS,ETC...)? *
Sim/ Não
2.9-IMAGINE QUE NÃO TEM NENHUM SEGURO DE SAÚDE: QUAL O PREÇO MÁXIMO POR MÊS QUE ESTARIA DISPOSTO A PAGAR PARA ADQUIRIR UM SEGURO DE SAÚDE? *
0 euros/ Até 7,5 euros/ Até 15 euros/ Até 22,5 euros
Até 30 euros/ Até 37,5 euros/ Até 45 euros/ Até 52,5 euros

3 - DOENÇAS CRÓNICAS
3.1- TEM OS SEGUINTES SINTOMAS? *
APARELHO RESPIRATÓRIO (Alergias, asmas, bronquite, tuberculose ou outras)
APARELHO DIGESTIVO (Gastrites, úlceras, doenças da vesícula ou outras)
APARELHO URINÁRIO (Infecções, cálculos ou outras)
APARELHO GENITAL (Próstata, miomas, quistos, nódulos, displasia ou outras)
OSSOS E ARTICULAÇÕES (Hérnia discal, reumatismo, dor ciática, artrose, joanetes, osteoartrose, tendinite ou outras)
DOENÇAS ENDÓCRINAS, METABÓLICAS OU DO SANGUE (Diabetes, tiróide, bócio, obesidade, anemia, hemofilia ou outras)
DOENÇAS NEUROLÓGICAS OU MENTAIS (Epilepsia, depressões, ansiedade crónica ou outras)
DOENÇAS DA PELE (Sinais com alterações, eczema, quistos ou outras)
VARIZES (Má circulação, derrames e flebites)
CORAÇÃO E APARELHO CIRCULATÓRIO (Hipertensão arterial, enfarte, angina de peito ou outras doenças do coração ou vasos sanguíneos)
OLHOS (Estrabismo, retinopatia ou outras, excepto miopia)
OUVIDOS, NARIZ E GARGANTA (Otite, sinusite, desvios do septo nasal, amigdalites frequentes ou outras)
DOENÇAS DO FORO ONCOLÓGICO (Cancro/ tumor, quisto ou outras)
3.2- SOFREU ACIDENTE OU LESÃO QUE OBRIGUE A FAZER ALGUM TRATAMENTO MÉDICO COMO REABILITAÇÃO OU FISIOTERAPIA? *
Sim, há menos de um ano/Sim, há mais de um ano
3.3- QUANTAS VEZES, NO ÚLTIMO ANO PRECISOU DE RECORRER AO HOSPITAL OU AO CENTRO DE SAÚDE, DEVIDO A PROBLEMAS INDICADOS EM 3.1 E 3.2? *
3.4-ALGUM DOS SEUS FAMILIARES DIRECTOS (pais, irmã(o)s) SOFRE OU SOFREU DE DOENÇA GRAVE? *
Sim/ Não

4- CUIDADOS DE SAÚDE
4.1- TEM MÉDICO DE FAMÍLIA? *
Sim/ Não/ Não sabe
4.2- ESTE ANO, QUANTAS VEZES É QUE CONSULTOU MÉDICOS? *
4.3-ONDE FOI A ÚLTIMA CONSULTA QUE FEZ? *
Centro de Saúde/ Hospital do Estado/ Consultório privado Hospital Privado/ Outro
4.4- A ÚLTIMA CONSULTA QUE FEZ, FOI UMA CONSULTA: *
Geral/ Especialidade/ Urgência
4.5- DE UMA FORMA GERAL COMO CONSIDERA O SERVIÇO NOS HOSPITAIS PÚBLICOS?
4.6- DE UMA FORMA GERAL COMO CONSIDERA O SERVIÇO NOS HOSPITAIS PRIVADOS?
A imagem dos Hospitais ou clínicas
O atendimento dos médicos
o conforto das instalações
O tempo de espera
4.7- NO CASO DE UMA GRIPE OU INDISPOSIÇÃO, ONDE COSTUMA IR? *
Urgência do hospital/ Centro de Saúde
4.8- NO ÚLTIMO ANO RECORREU A CONSULTA PRIVADA, OU URGÊNCIA EM HOSPITAL PRIVADO? *
Sim/ Não
5- PLANEAMENTO FAMILIAR
5.1- TEM FILHO (S) DAS SEGUINTES IDADES? *
Com menos de 1 ano/ Entre 1 ano e 2 anos
Entre 2 anos e 3 anos/ Entre 3 anos e 6 anos
5.2- EM QUE LOCAL FOI ACOMPANHADA A GRAVIDEZ?
Centro de Saúde /Maternidade ou Hospital/ Consultório ou Clínica Privada/ Outro
6-CUIDADOS PREVENTIVOS
6.2-FUMA DIARIAMENTE? *
Sim/ Não
6.3- NO ÚLTIMO ANO:
Vacinou-se contra a gripe/ Verificou tensão arterial/ Mediu o colesterol/ Fez exames de rotina de electrocardiograma, raio-x torax ou mamografia/ Não fez nada
7-RENDIMENTO
7.1- INDIQUE QUAL O RENDIMENTO MENSAL (LíQUIDO) DO SEU AGREGADO FAMILIAR. *
Menos de 600 euros/ De 601 a 900 euros
De 901 a 1.200 euros/ De 1.201 a 2.000 euros
De 2.001 a 3.000 euros/ De 3.001 a 4.000 euros
De 4.001 a 5.000 euros/ Mais de 5.001
7.2-Suponha que lança um dado: Se saírem os números 5 ou 6, ganha 100€. Se saírem os números 1,2,3 ou 4 não ganha nada. Qual é o valor MÁXIMO que está disposto a pagar para poder jogar este jogo? *
0€/ 10€/ 20€/ 30€/ 40€/ 50€/ 60€/ 70€/ 80€/ 90€/ 100€